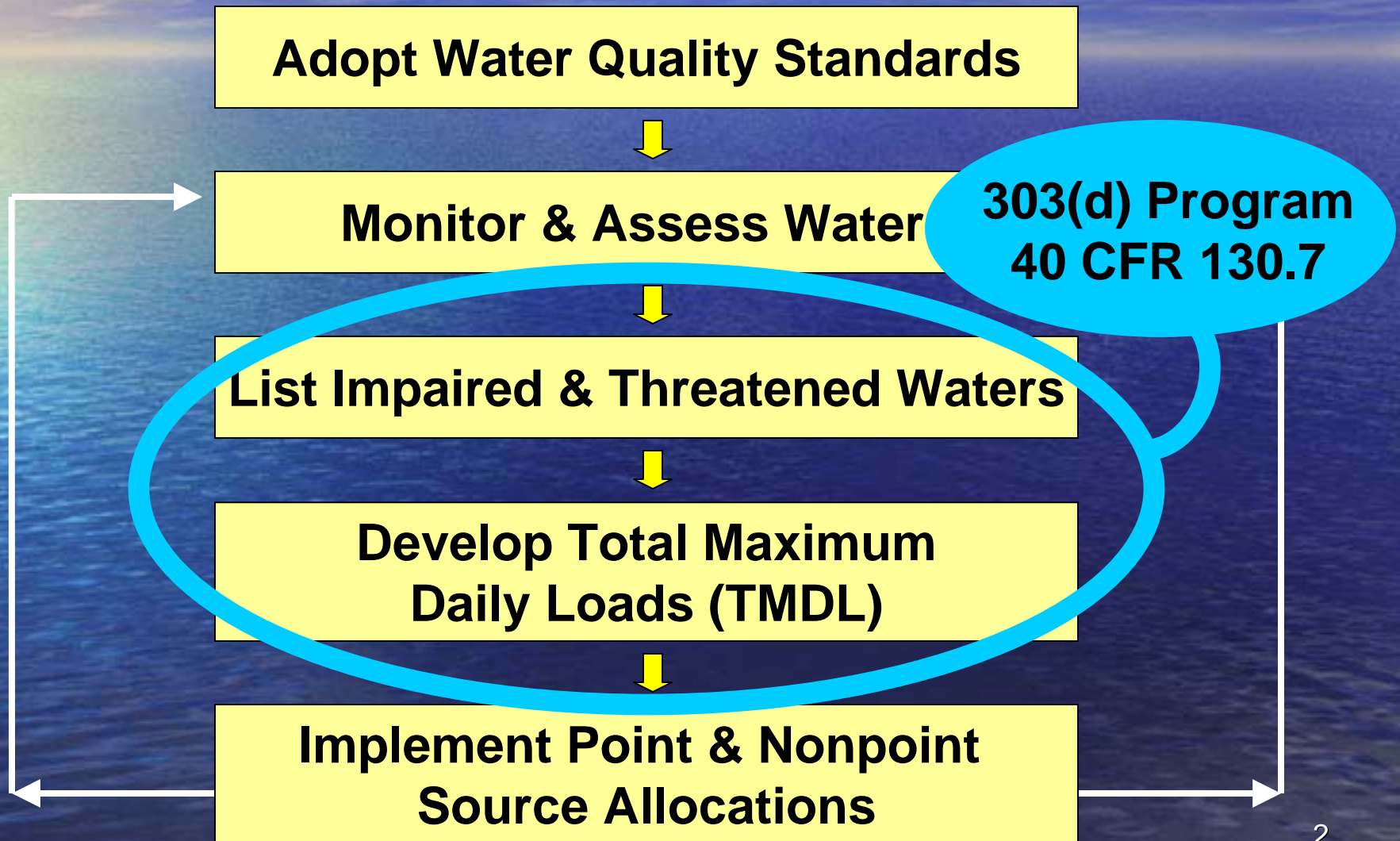


# Total Maximum Daily Loads (TMDLs) under the Clean Water Act

Jack Generaux  
TMDL Team Leader  
Region 7, EPA

# CWA Restoration Framework





# The "List"

- The 303(d) list covers all water quality-limited segments still requiring TMDLs.

# Top nationwide causes of impairment

**Pathogens**

**Metals**

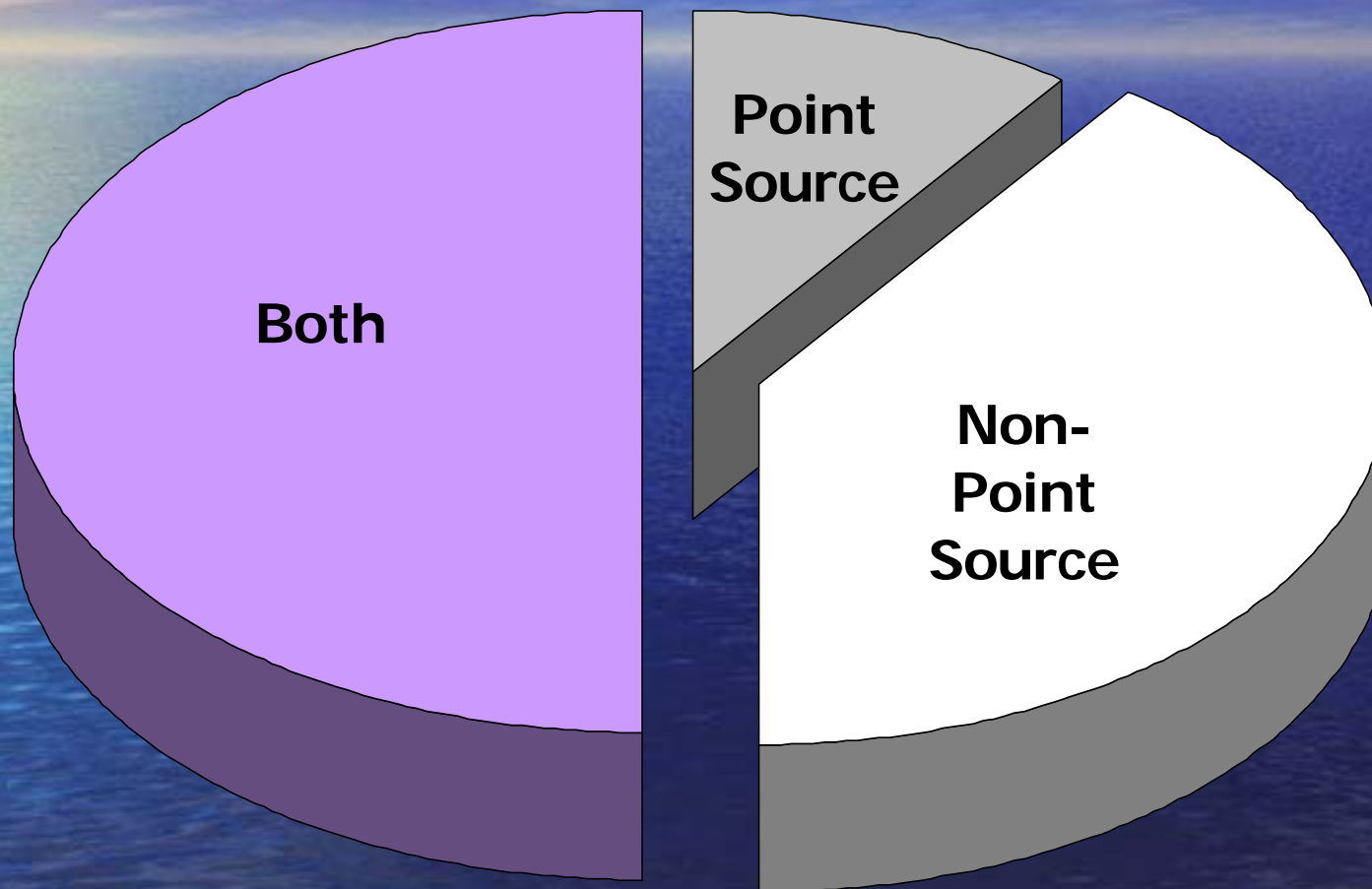
**Nutrients**

**Sediment**

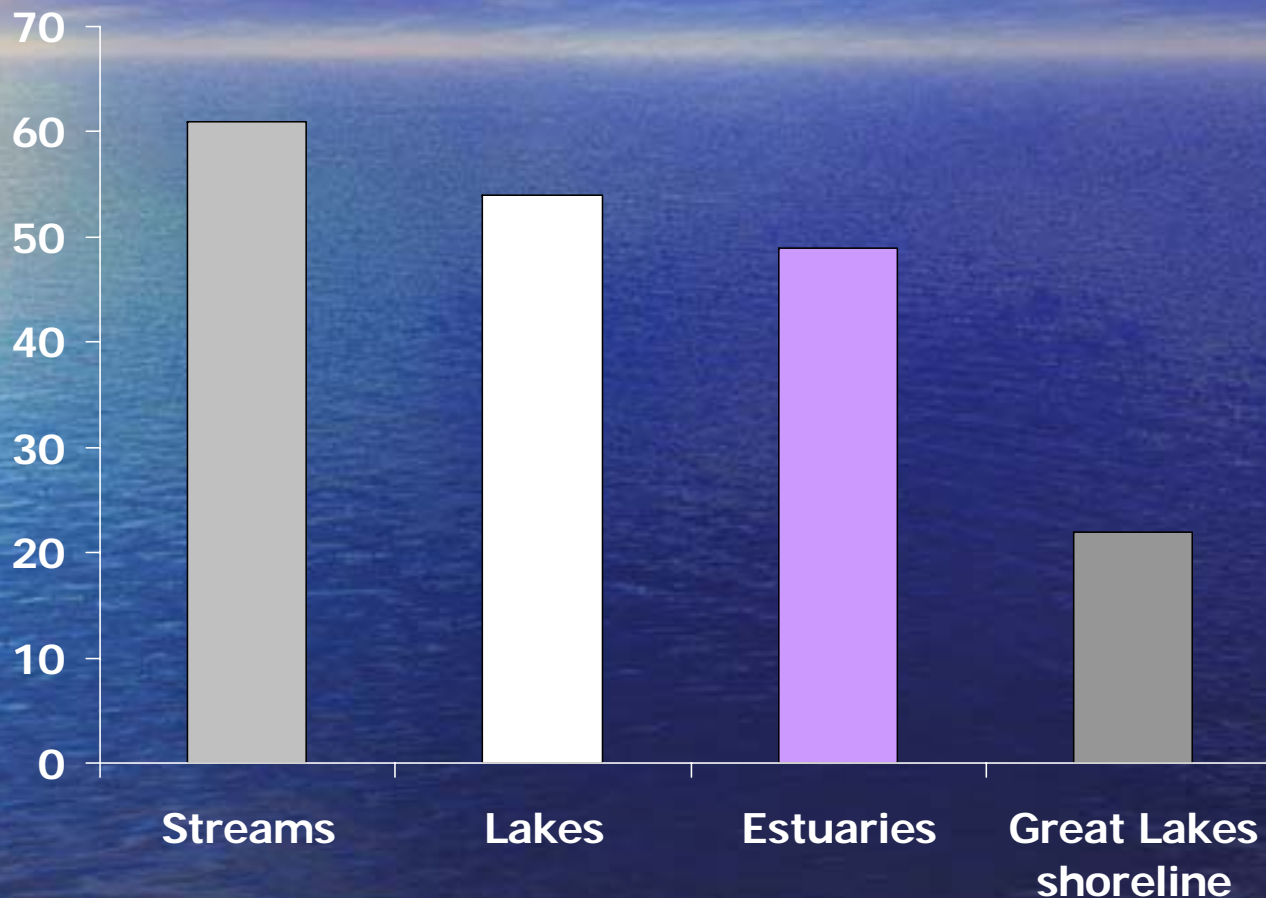
**Low dissolved oxygen**



# Sources

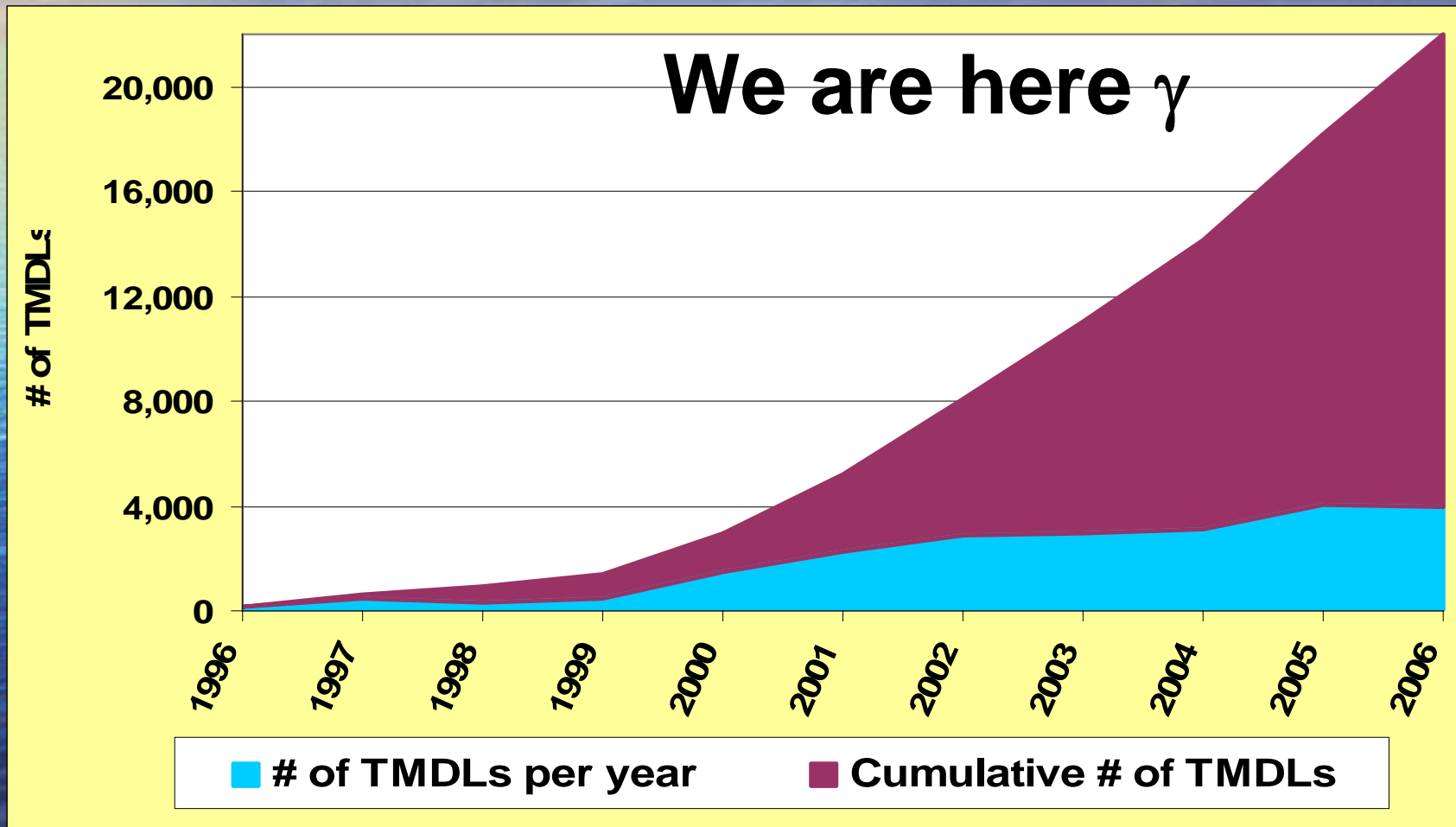


# Nationwide percentages of assessed waterbodies that are impaired



About 25,000 waters have been listed through assessing about 30% of waters

# Nationwide over 20,000 TMDLs have been completed





# TMDL Requirements

- States generally develop TMDLs
- EPA may develop TMDLs, particularly if required under court order.
- No statutory or regulatory time frame for TMDL development (but, sometimes in Consent Decrees)
- EPA guidance established 8-13 year time frame from time of initial listing



# What is a TMDL?

- A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards.

# Elements of a TMDL

- The impairment
- Loading capacity
- Sources identification
- Allocation
- Margin of safety (MOS)
- Seasonal variations
- Reasonable assurance
- Public involvement



# The Impairment -- What Water Quality Standard?

- Criteria
  - Narrative or numeric
  - Water column, sediment, or fish tissue
- Categories of Use
  - Recreation
  - Aquatic life
  - Human health (drinking/fish consumption)
  - Other
- Antidegradation Considerations

# Loading Capacity --translate the standard to a load

- The science – modeling, hydrology, chemistry, etc. etc.
- Specific numeric pollutants – acute and chronic
- Translators – e.g., DO, biologic, nutrients and sediment
- Recent ruling – express as load per day



# Source Identification

- Non Point Sources
  - Runoff related to land use
  - Unpermitted activities (e.g., septic tanks, cows in the stream, animal operations, manure applications)
- Point Sources (all NPDES permitted facilities)
  - Municipal and Industrial Permits
  - Storm Water
  - CAFOs

# Allocation

**WLA** Waste Load Allocation

Amount of pollutant from existing/future point sources (not just pipes)

**LA** Load Allocation

Amount of pollutant from existing/future nonpoint sources and natural background

**MOS** Margin of Safety

Uncertainty in the analysis



Now for the “geeky” stuff

$$TMDL = \sum_{i=1}^n WLA_i + \sum_{j=1}^m LA_j + MOS + growth$$

$\Sigma WLA_i$ : Sum of waste loads (point sources)

$\Sigma LA_j$ : Sum of loads (nonpoint sources)

MOS: Margin of Safety

# Other components of a TMDL

- Margin of safety (MOS)
- Seasonal variations
- Reasonable assurance
- Public involvement



# TMDL Implementation

- WLA (Point Sources):
  - Federally enforceable -- NPDES
  - WLA must be incorporated into next permit.
- LA (Nonpoint Sources):
  - No federal enforcement program
  - State and local NPS management programs (mostly voluntary)

# TMDL Implementation (continued)

- Additional challenges :
  - Nonpoint source load allocations may not be assigned to individual sources
  - Implementation plans not required-although many states require or include them in their TMDLs.
  - Finding Sponsors to promote the voluntary NPS activities



# TMDLs can motivate change!

Before....

After



Deep Creek, MT

# Category 4b (TMDL Alternative)

## Permit in lieu of a TMDL

Pollution control requirements of a local, state or federal authority are stringent enough to achieve WQSs in a reasonable period of time

Permit in Lieu of a TMDL:

- The permit action covers all sources
- NPDES permits have been issued with water quality based effluent limits
- Compliance date to achieve WQS



# Contact Information

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- *Additional Information on 303(d) Program:*
  - [www.epa.gov/region7/water/tmdl.htm](http://www.epa.gov/region7/water/tmdl.htm)
  - [www.epa.gov/owow/tmdl](http://www.epa.gov/owow/tmdl)